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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/724,882	12/02/2003	Yoshihiro Uetani	Q78640	1657

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WASHINGTON, DC 20037-3213

EXAMINER	
DESAI, ANISH P	

ART UNIT	PAPER NUMBER
1794	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/724,882	UETANI ET AL.	
	Examiner	Art Unit	
	ANISH DESAI	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 January 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7 and 9-12* is/are pending in the application.

4a) Of the above claim(s) *10-12* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7 and 9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *01/29/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant's arguments in response to the Office action dated 10/30/07 have been fully considered.

1. Claims 1-7 and 9-12 are pending. Claim 8 is cancelled and claims 10-12 are withdrawn. It is noted that Applicant has cancelled claim 8 and incorporated its subject matter into claim 3.

2. The 35 USC Section 103(a) rejection based on Yuji et al. (JP 2002-110245-machine translation previously provided by the Examiner) in view of Nakagawa et al. (WO01/75991) is maintained.

3. All of the previously made obviousness type double patenting rejections are maintained.

4. The 35 USC Section 112-first and second paragraph rejections are withdrawn in view of the present amendment and response.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yuji et al. (JP 2002-110245-machine translation previously provided by the Examiner) in view of Nakagawa et al. (WO01/75991) substantially as set forth in the previous Office Action.

6. Regarding claim 1, Yuji et al. discloses a lithium ion secondary battery, which uses a solid polymer electrolyte (abstract, page 6) and a liquid crosslinkable composition for the solid electrolyte (0001). The liquid crosslinkable composition for the solid electrolytes of Yuji et al. comprises radically polymerizable monomers of oxetane ring containing monomer and epoxy group containing monomer (0011). Moreover Yuji et al. teaches a battery separator (0004). Additionally, Yuji et al. teaches that the liquid crosslinkable composition containing oxetane group and epoxy group is injected into the airtight container, which has units such as electrodes and separator (0020). The liquid composition infiltrates into gaps such as electrode and a separator (0020).

7. With respect to claim 1, it is noted that the reference of Yuji discloses same crosslinking polymer containing cation-polymerizable functional group selected from the group consisting of 3-oetanyl group and epoxy as claimed by Applicant. The difference between the invention of Yuji and the presently claimed invention is that Yuji does not explicitly teach of coating of aforementioned crosslinking polymer composition onto a porous film substrate. Instead, Yuji discloses injecting aforementioned crosslinking polymer into the airtight container (i.e. battery), which has units such as electrodes and battery separator. However, Nakagawa teaches that as a method for inhibiting liquid electrolyte leakage there is known a method, which comprises incorporating a crosslinkable monomer in a liquid electrolyte, subjecting the liquid electrolyte to crosslinking reaction to produce a jelly solidified gel electrolyte, and then using the solid electrolyte comprising a solidified liquid electrolyte singly or in combination with a substrate as a separator (0004). According to Nakagawa such method has

disadvantage because in the case of such a gel electrolyte, ions move through the gel at a very low rate than in the liquid electrolyte, easily causing an increase of internal resistivity of battery and drop of high rate discharge capacity. The resulting battery shows insufficient battery properties (0005). To overcome these disadvantages Nakagawa teaches a separator for battery prepared by impregnating or coating a porous material (porous film/membrane) with a monomer solution comprising crosslinkable monomer (0071). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the porous film of Nakagawa as a battery separator in the invention of Yuji and form a polymer layer on the porous film as taught by Nakagawa, motivated by the desire to avoid increase of internal resistivity of a battery and drop of high rate discharge capacity.

8. Regarding claim 2, the oxetane ring containing monomer of Yuji et al. contains 3-oxetanyl group (0013).

9. With respect to claim 3, the liquid crosslinkable composition contains the other radically polymerizable monomer (claim 2). Further, Yuji et al. teach the claimed formula III on pages 27 and 28, which reads on the methacrylate monomer as represented by formula III as claimed.

10. Regarding claim 4, Yuji et al. teach that the quantity of the radically polymeizable monomer with oxetane ring and another radically polymerizable monomer is 5 to 50% by weight (claims 2 and 3).

11. With respect to claim 5, Yuji et al. disclose that the quantity of the radically polymerizable monomer having epoxy group and the other radically polymerizable monomer is 5 to 50% by weight (claims 4 and 5).

12. Regarding claims 6 and 7, Yuji et al. teach the claimed 3-oxetanyl group containing (meth) acrylate formula (I) on page 25 and claimed epoxy group containing (meth) acrylate formula (II) on pages 26 and 27 respectively.

13. Regarding claim 9, Yuji is silent as to teaching of porous film substrate having a thickness of 3 to 50 μm and a porosity of 30 to 95%. The invention of Nakagawa is previously disclosed. Nakagawa teaches that the thickness of the porous material (porous film/membrane) is not greater than 30 μm (0069) and the porous material has porosity of 50% (0106). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the porous film substrate of Nakagawa with the thickness and porosity as taught by Nakagawa as a battery separator in the invention of Yuji, motivated by the desire to provide a suitable battery separator.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir.

1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

14. Claims 1-12 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-17 and claims 1-17 of copending Application No. 11/267,404 and 10/569,417 respectively. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1-12 of presently claimed invention encompass the same subject matter as claimed by claims 1-17 of aforementioned copending applications.

15. This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

16. Applicant's arguments with respect to claims 1-7 and 9 are fully considered, but they are not found persuasive.

17. Regarding the art rejection based on Yuji (JP'245) in view of Nakagawa, it is noted that Applicant argues that the crosslinked material layer of Nakagawa is like a sponge impregnated with the liquid electrolyte. According to Applicant the primary reference of JP'245 discloses that the solidification of electrolyte is necessary in order to

avoid danger such as leaking of electrolyte, explosion, and ignition [of battery cell]. Further, Applicant asserts that in JP'245 it is preferable that there is no bleeding of the electrolyte from the gel. Applicant concludes that the state of liquid electrolyte desired by Nakagawa is not preferred in JP'245, thus the disclosure of JP'245 teaches away from Nakagawa. The Examiner respectfully disagrees for the following reasons:

18. While Applicant asserts that it is preferable in JP'245 that there is no bleeding of the electrolyte from the gel, it is noted that the secondary reference of Nakagawa at paragraph 0001 also discloses of providing a battery separator and a battery having **"high liquid electrolyte leakage preventive properties"** (see 0001 of Nakagawa). Thus, to the Examiner Nakagawa reference is provides a battery that prevents leakage of liquid electrolyte. Additionally, it is noted that the composition for forming the polymer layer (i.e. crosslinking polymer) is disclosed by the primary reference of JP'245. Specifically, as set forth above, the composition to form crosslinking polymer as claimed in claims 1-7 is disclosed by the prior art of JP'245. Moreover, the secondary reference of Nakagawa is in the same field of endeavor as that of the presently claimed invention and primary reference of JP'245, namely in the field of battery and battery separator. Nakagawa is relied upon to merely teach a use of porous film substrate as a separator in the battery. To the Examiner using a known composition and coat a porous film in forming a battery separator would have been obvious, motivated by the desire to form a battery with high liquid electrolyte leakage preventive properties. Accordingly, art rejections are maintained.

Conclusion

19. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANISH DESAI whose telephone number is (571)272-6467. The examiner can normally be reached on Monday-Friday, 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hai Vo can be reached on 571-272-1485. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. D./
Examiner, Art Unit 1794

/Hai Vo/
Hai Vo
Primary Examiner, Art Unit 1794